

c. Chibisa. "Iris brownish red; legs, toes, and cere light red; edge of eyelids light red."

d. Chibisa.

17. *POLYBOROIDES TYPICUS*, Smith.

Two examples. "Iris very dark; cere and space round the eye, up to bill, light yellow; legs and toes yellow; claws black."

18. *ATHENE WOODFORDI*, Smith.

One example. "Iris light brown." Chibisa.

19. *SCOPS LEUCOTIS* (Temm.).

Strix leucotis, Temm. Pl. Col. 16.

One example. "Iris golden." Magomero.

20. *BUBO LACTEUS* (Temm.).

Two examples:—

a. Magomero.

b. Chibisa. "Iris dark russet brown."

21. *BUBO MACULOSUS* (Vieill.).

Strix maculosa, Vieill. N. Dict. H. N. vii. p. 44.

Two examples. "Cere dull black; iris orange."

22. *STRIX FLAMMEA* (Linn.).

One example. Quilimane. "Iris very dark blue."

XXV.—*On the Birds of the Zambesi Region of Eastern Tropical Africa.* By JOHN KIRK, M.D., F.L.S., F.R.G.S.

THE following is an enumeration of birds collected by myself in Eastern Tropical Africa, along the course of the Zambesi, its tributary the Shiré, and on the western shore of Lake Nyassa. To these a few have been added from the collection of the late Dr. Dickinson, of the Central-African Mission,—the birds of prey, of which that collection chiefly consists, having been already described by Dr. P. L. Sclater, from whom I have received valuable assistance in the determination of species, and as regards access to the library under his care. Mr. G. R. Gray, of the British Museum, has examined and named the few new species obtained. Ornithology having formed no especial study of mine, collections were made only where facilities offered and other duties did not interfere. This list, therefore, includes

the more common birds between the sea-coast and the first rapids which stop navigation, with a few from the inland parts and lake-region.

The number of species determined extends to 150. Others were observed, to which, from want of specimens, it is impossible to refer. Considering the vast extent of the region passed over, further research may yet treble the number and make us acquainted with many new forms.

Approached from seaward, the Zambesi coast presents a long dark line of mangroves, broken here and there by low sand-hummocks, but without any mountains or rising ground visible in the distance. The river opens by four mouths, two of which are navigable to vessels of light draught, although dangerous from being little known, and from the heavy surf which frequently breaks on the bar. An alluvial plain extends for 60 miles inland, through which the Zambesi flows nearly north and south. This vast delta is covered with grasses of gigantic stature, with here and there a few trees. No elevation rises above the ant-hills, which are sometimes, however, 20 feet in height. This region abounds in game, both large and small. Antelopes, buffaloes, and wild pigs are common; also the Lion, Leopard, Serval, and Hyena, with smaller animals, the *Genetta*, *Ratelus*, *Orycteropus*, *Macroscelides*, and *Galago*. In the river and marshes are found water-fowl, including Ducks, Geese, Flamingoes, Pelicans, Herons, and Rails; in the plains, Bustards, Francolins, and Larks.

Above, the delta passes into a wide valley, the ground rising on either side, clothed with primeval forest. Here the trees attain great dimensions, and are festooned with wild vine, india-rubber shrub, and other climbers; and the Eland, Hartebeeste, Blackbuck, Kokang, and Zebra first appear. Among birds we find Guinea-fowl, both plumed and horny-headed, Crested Flycatchers, Hornbills, Fruit-pigeons, and Sun-birds. The river is here from one to two miles wide, with large reedy islands in the channel, which is further encumbered by shallows, rendering navigation both difficult and tedious.

The Zambesi is joined by the Shiré about one hundred miles from the coast. Arising from Lake Nyassa, in lat. 14° 25' S.,

this river flows southwards, following nearly the 35th degree of east longitude, the confluence being near the isolated hill Moramballa, which rises 4000 feet above the plain, and is the first elevated land met with in this region. The Nyassa, of which the north end is yet unknown, extends south for 200 miles, with a width varying from 20 to 60 miles, its shore presenting a variety of sandy bays, sheltered coves, reedy swamps, or bold rocky headlands and precipitous mountains. During the rains its level rises three feet, and its water is drained off by the Shiré, which for 60 miles of its course after leaving the lake is smooth and sluggish, having rich lands on either side. Those on the east are watered by streams coming from the mountains which divide off the Shirwa Lake, and attain at their highest an elevation of 8000 feet. Before reaching the sea-level, the Shiré makes a descent of 1500 feet, by a series of rapids 50 miles in extent, above and below which the river is free of rocks. Between the different rapids are many smooth reaches, and the scenery in this part is very fine. On the eastern side, spurs from the neighbouring mountains render the path impracticable except to a party on foot. The western bank is more even; along it we carried the ship's boat for the navigation of the lake; nor do any obstacles here exist, which might not easily be overcome, to the formation of a waggon-path. This region is covered with open forest, devoid of large trees, except the Baobab, without the overgrown stem of which an African landscape would be incomplete.

Where the rapids end, the valley again widens, and the hills recede. Hence to the confluence of the Shiré and Zambesi, in rectilinear distance, is about 100 miles, the average width between the opposite hill-slopes being 20 miles. This is one of the richest ornithological regions. The grass plains abound with Whydah-birds and Weavers, and the marshes in Waterfowl and Waders; but the greatest variety is found in the open forest and scrubby bush which covers many parts, where food, both insect and vegetable, is abundant and varied. A greater number of Eagles and Hawks are here found than elsewhere. The Great Tawny Owl (*Scotopelia peli*), the *Bubo lacteus*, *Athene capensis*, and *Falco dickinsoni* were here obtained. Purple and

Grey Turacoës are common, as likewise Mouse-birds, Parrots, and Rollers. The river-banks are honeycombed with the holes of Bee-eaters and Martins.

Herd of elephants and buffaloes roam over the plain and frequent the marshes. Of the former as many as 800 have been seen at one time from the mast-head—one of the herds, when moving in Indian file, extending over a mile. The river abounds with Hippopotami, Crocodiles, and fish of various sorts.

Few birds have reached England from the country above the confluence of the Shiré and Zambesi. The neighbourhood of the Portuguese town of Teté is a rich ornithological field, the varied physical features giving rise to diversity of plants and animals. Among the mountains which form the barrier to Zambesi navigation, 30 miles above Teté, the *Cosmetornis* was first met with in full plumage; since then it has been seen in other parts. These rapids, named "*Kebra bassa*," or "the end of labour," offer some of the grandest scenery in Eastern Africa, second only to the bold headlands of the Nyassa and the Great Victoria Falls of the Zambesi, where the river, one mile wide from bank to bank, drops at once by a perpendicular fall of 350 feet into a chasm only 80 yards across from the face of falling water to the opposite and equally vertical rocky side. The sight of this well repays the toils and dangers of a march on foot from the east coast. From such a spot, however, the number of specimens which it is possible to carry off is limited. In my case the few I obtained were subsequently lost. It was the very driest of the hot season when we visited this region, and few birds appeared. Guinea-fowls and Bustards were common; and in the Batoka hills to the north a fine species of Francolin was seen, differing from what had been met with elsewhere.

The Antelopes of this part are peculiar, or at least contain several peculiar species. In the marshy lands alone are found the *Lechee*, *Poku*, and *Nakong*, whose spoor is a foot in length; the Striped Eland—a better-formed animal than some specimens of the common sort in the plains; on the hills a small and seemingly new sort of *Steinbok*, and small mountain Antelope, peculiar to the Batoka hills, named "*Teinyane*."

The plants of this part were many of them new, indicating

strange affinities to other continents, and foreshadowing what is yet to come from the unknown centre of Southern Tropical Africa. The difficulties which now stand in the way are those of transport in parts where horses cannot live, and through the coast-region, in which alone there is any great danger from the people. In the interior, with a knowledge of the language and a little good management, there is little fear. But great patience is required, and the deadly river-valleys must be avoided.

Few regions of equal extent present so uniform a type in their organic beings as Tropical Africa. In its birds this is especially noticeable, most of the species being common to both sides of the continent. Placed between the Cape and Abyssinia, the Zambesi contains a few species peculiar to each.

In its animals the Cape offers no such marked differences as we find in the plants. These constitute one of the best marked of botanical regions, characterized both by many and singular endemic species, and by the high development of natural groups elsewhere weakly represented. They may represent an ancient flora now cut off from all communication with other temperate forms by the tropical zone of Africa, which, having no lofty axial range, is as effectual a barrier to the transmission of plants as if it had been an ocean. Although the present geological features of Central Africa are of great antiquity, a difference of climate must have prevailed when the great inland seas existed, and a change in its organisms have taken place when these were drained through lateral fissures. The formation of river-deltas would commence at that time. Fossils contained in these parts attest the existence of species of animals identical with the present—probably soon after they began to be formed; while the absence of these species from the island of Madagascar would indicate that a separation between it and the mainland has taken place before the present fauna occupied the continent.

As that island contains very many plants of the peculiar Cape types, we may look on these as representing an age or flora anterior to the separation, allowing for modifications which may have since taken place under altered conditions. But, quite independently of this, we find another element in Madagascar and its neighbouring islands, the Mascarenes, Comoros, and

Seychelles, not represented on the continent of Africa, and differing from what is met with in any other part of the globe. This consists of peculiar natural orders, elsewhere unknown, and of singular forms having American rather than African or Indian affinity. Had these existed in Madagascar at the time it was united to the mainland, surely some trace of them would still remain on the continent.

These islands possess an equally distinctive fauna, parallel with the peculiar flora. The African element, however, is not so strong amongst the animals. The name proposed by Dr. Sclater for this region—"Lemuria"—is apt and distinctive. Although I do not acquiesce in the principle that a region should be named after the oldest race it contains; it should be from its actual possessors, which here is the case. But in Madagascar the African element preserved in its flora possibly represents an older time than the Lemurian fauna. Plants have more resistance than animals, and less speedily undergo change. Yet I would not anticipate that there are to be found in the fossil strata of Madagascar remains of the African Proboscideans and Antelopes. The communication between the islands and the continent may have been before these came to Africa. Since the separation, a tertiary period, with its peculiar Nummulites, mollusks and fishes, preserved in the limestone-band which encrusts the Eastern African continent in these parts, has passed away; and although the Hippopotamus and existing animals have been traced back in those regions to an old diluvial period, yet these fall far short of the separation-period of these islands from the mainland.

The wide extent of shallow soundings in the seas around Madagascar and the Seychelles indicates an old continent now under water. The Seychelles, for instance, are but the summit-peaks of a submarine table-land of great extent—much greater than that given in the charts, for these seas are far from having been thoroughly surveyed. Again, a mass of coral-reefs, rings of low lands above water, are scattered in the seas between the Seychelles and Madagascar. It is not to be supposed, however, that every peak now above the surface is of great age. Two geological structures are found. That of Madagascar and the Sey-

chelles is of old primary axial rocks, such as we now find in the African mountain-ranges. Besides, we have Bourbon and Comoro, active volcanos, with others near them of the same origin. These may have, and some of them undoubtedly are of, a much more modern date than others, and in their fauna and flora illustrate other phenomena. The line of volcanic action is carried across Africa. The peak of Kilimanjaro, 20,000 feet high, inland from Zanzibar, has that origin, and on the other side the Cameroons claim the same; the intervening space is unknown, but may have in it other summits equal to either.

In Eastern Tropical Africa the year is divisible into three periods—that of the rains from November until April, the cool months of May, June, and July, and the hot dry season of September and October. The first showers fall in October; and, light as they are, with the increasing moisture vegetation then commences, and a few trees burst into bloom. Birds assume from that time nuptial plumage, and begin to pair. Wild fowl come in large flocks from the north with the first heavy rains. From the great marshes they never entirely disappear,—a few remain at all seasons; but the mass is away in the north, coming south in December to breed.

Many birds, such as the Guinea-fowl, the Hornbill, &c., which during the dry parched months frequent the vicinity of water, are far off in the forest with the commencement of the rains.

In August, September, and October the heats become intense; the air is extremely dry; the grass plains are burnt up, and become absorbents of heat; the forests are leafless; food and water alike are scarce. These phenomena have a vast influence on organic life, limiting to narrower bounds the number of species capable of enduring such conditions. Herein grasses have a great advantage: dormant during the droughts, with the first showers they spring up and rapidly increase, choking young shrubs at one season, and leaving them exposed to the fierce rays of the scorching sun at another.

Africa is by no means destitute of sweet singing birds; but they are musical only in the seasons of the rains. The loud bleating cry of the Hornbill and the cackle of the Guinea-fowl are more characteristic of the dry season.

The African possesses but few domestic birds and other animals. The Fowl is universal, but commonly small and tasteless. One tribe met with in the interior had discovered the art of making capons, and practised it with great success.

Besides the Domestic Fowl, Pigeons and Guinea-fowl are seen tame, the former of a breed similar to the tame Pigeons of Egypt. The Guinea-fowl is never permanently domesticated, refusing to breed in captivity.

Fam. VULTURIDÆ.

1. *GYPS FULVUS* (Gm.).

Common in the Zambesi delta in November and December. Known as the "Tumbao-zo," or the Opener of Elephants, being supposed to be the only bird capable of penetrating the hide of the dead animal. The Common Vulture (the brown *Neophron*) may be seen patiently waiting for days the bursting, by decomposition, of the carcase.

To the inexperienced hunter the *Gyps* is a great annoyance. If game be left for an hour in the open plain while the men come to carry it off, the birds will descend, and in a very short time completely devour it. This is not so if it be covered over with a little grass or with branches, clearly proving that sight alone is the sense by which the birds discover their prey. If part of the animal be exposed, it matters not—probably owing to its being mistaken for one asleep; nor does the presence of blood seem to guide the birds, if the carcase be concealed from view.

2. *NEOPHRON PERCNOPTERUS* (Linn.).

One specimen was seen in the mountains to the south of Nyassa; it was not killed, but seemed exactly to resemble the Egyptian Vulture. It is a rare bird, and was nowhere else observed.

The Common Vulture, called "Deze," of which no specimen was prepared, is universal; it is a *Neophron* resembling the common brown Vulture of the Cape.

Fam. FALCONIDÆ.

3. *HALIAËTUS VOCIFER.* Native name, "Nkwazi."

On the lakes and rivers; common among the mangrove-creeks of the coast; on the Zambesi, above the great falls, and on Lake Nyassa,—in fact, wherever the forest comes down to the shore, or high rocks overhang it.

When in search of prey, it may be seen soaring over the water, and making a sudden plunge, for a moment being beneath the surface. On securing a fish (which it does with its talons), it flies off to some sand-bank to devour it; or, if the fish be too strong, it will spread out its wings and be dragged along for some distance, landing at the first convenient spot.

Should an opportunity occur of robbing other birds, the Fish Eagle is always ready to do this. Thus it will force the Common Kite to give up a fish, and catch it before it reaches the water. In this it succeeds only after a long chase; for the Kite is a swift flier. In like manner it will take a fish from the Pelican's pouch, as witnessed by Livingstone.

This bird builds in high trees near the water. The nests are very common near the precipitous shores of the Nyassa.

4. *HELOTARSUS ECAUDATUS.* Native name, "Chapungo."

Frequent in the marshy lands of the river Shiré; in other parts far from common, but met with in all the river-valleys. Known when soaring by the short tail. Its food consists of small animals—snakes and lizards; but it will also eat carrion. Of this we had an instance when, having set a poisoned bait for a Spotted Hyena which had annoyed us, it was vomited, partly on account of the excessive dose, and also from the animal having devoured the limbs of a woman previously. In the morning, on taking up the spoor, we found the Hyena in dense reeds, recovering from the poison, and killed it. During the day, one of these Eagles was seen to alight where the food had been vomited, and, on being followed up some time after, was found in an intoxicated state, brought on board and killed, and the meat found in its stomach.

5. *SPIZAËTUS OCCIPITALIS* (Daud.).

Frequents the neighbourhood of rivers, feeding, not on fish,

but on the animals near the banks or in the grassy, damp islands. Not observed in the mountains, but common in the Shiré and Zambesi valleys.

6. ACCIPITER TACHIRO (Daud.).

Common all along the Shiré valley.

7. MICRONISUS MONOGRAMMICUS.

From the open forests in the Shiré valley.

8. FALCO DICKINSONI, Sclater, sp. nov.

One specimen obtained in the Shiré valley. Native name, "Kakosi."

9. ERYTHROPUS VESPERTINUS.

This pretty little Hawk is found near the river. It appears only at sunset and in the dusk, when, coming in great numbers from the shady forest or from among the fronds of the lofty Borassus-palm, it hovers, swallow-like, over the plains and water, catching dragon-flies and locusts, which, with other insects caught on the wing, seem to constitute its chief or only food. In February and March it was seen in numbers on the Shiré, where the bush-vegetation and palm-forest come down to the river.

10. ELANUS MELANOPTERUS (Daud.).

Very common both on the Shiré and Zambesi.

11. MILVUS ÆGYPTIUS.

This Kite arrives in the Zambesi valley from the north in August, and is very abundant along the river. It departs again before the month of June. It catches fish in the shoal waters, but also eats garbage of all sorts from the shore.

12. CIRCUS RANIVORUS.

Nowhere very abundant. Observed in the Elephant Marsh, river Shiré. Hovering over the grass plains in March.

13. SERPENTARIUS REPTILIVORUS.

Not observed on the Lower Zambesi nor in the vicinity of the Nyassa. One specimen alone was seen on the plain between the Zambesi and Batoka hills, about the confluence of the

Kafne. By the natives it is respected from the nature of its food, and from its killing snakes.

Fam. STRIGIDÆ.

14. BUBO LACTEUS.

The habits of this bird resemble those of the *Scotopelia peli*. It is much more common, being rather plentiful among the mountains, and not unfrequently met with in the Zambesi and particularly the river Shiré valley. They have been observed commonly in pairs.

15. OTUS CAPENSIS, Smith, S. Afr. Zool. pl. 67.

A common Owl in the clumps of trees bordering the valley, over the grass plains, near which it hunts, during the dusk of evening, in search of small animals.

16. ATHENE CAPENSIS, Smith, *ibid.* pl. 33.

Not unfrequent in wooded country near to open plains. Obtained in the river Shiré valley, opposite the village of Chibisa, in October.

17. SCOTOPELIA PELI, Bp.: Ibis, 1859, pl. 15.

One of the rarest of the Raptores in the Zambesi region. I know of only three pairs having been seen, and of these five birds were secured. The pairs frequented the same locality every day, and, from their colour, were extremely difficult to observe. Once started, they found more difficulty in again concealing themselves, but remained exposed on some limb of a tree, and might then be approached. They were observed living in single pairs, both in August, before the rains, and in March, in the spring. All three were inhabitants of the river Shiré valley, one at the confluence, the others near the Murchison Rapids. The food of this Owl is said by the natives to be small animals and snakes.

Fam. TURDIDÆ.

18. BESSONORNIS VOCIFERANS, Sw.

Shot among mango-trees at Shupanga: in full plumage in January.

19. CAMPICOLA PILEATA.

Among the rocks of the Murchison Rapids, common; in other situations not observed.

20. CRATEROPUIUS PLEBEIUS.

Common in long grass near rivers. Found in flocks of five or six. A noisy bird in the reeds, but a fine songster when perched on the *Borassus*-palms in the early mornings during the rainy season.

21. MOTACILLA VIDUA. Native name, "Droindwi."

Everywhere. Never injured by the natives, who have some superstitious belief connected with it.

22. MACRONYX CROCEUS.

Abundant on the sea-coast of the delta. Probably the same as that found in the interior. Seems to feed on the berries of the *Cassytha*, a creeping parasitic plant.

Fam. PYCNONOTIDÆ.

23. PYCNONOTUS NIGRICANS.

One of the commonest birds in the country. A good songster, but not equal to *Crateropus plebeius*.

Fam. ORIOLIDÆ.

24. ORIOLUS, sp.*

Found near Teté, on the Shiré, and in the Delta. Plumage varies considerably, according to season.

Fam. LANIIDÆ.

25. ENNEOCTONUS COLLURIO.

Shupanga. Shiré.

26. LANIARIUS, sp. nov.

Common near Teté, where many specimens were obtained. It is near to *L. bulbul*, but differs in being rather larger, and in having at the end of the tail-feathers a central white spot.

Specimens are in the British Museum.

* A young bird, probably of *O. larvatus*?—P. L. S.

27. *TELEPHONUS ERYTHROPTERUS*.

Shupanga, on the Zambesi. Frequent also in other parts.

28. *DRYOSCOPIUS ÆTHIOPICUS*.

Common at Shupanga, in the shady forest, near the mango-plantations, in January.

29. *MELANORNIS ATRONITENS*.

Very common everywhere near fields and in open wooded lands.

30. *PRIONOPS TRICOLOR*, Gray, P.Z.S. 1864, p. 45*.

Inhabits wood-country; frequenting the neighbourhood of the mango-plantations at Shupanga, and the foot of the mountains to the north of the river Shiré, at Chibisa.

31. *PRIONOPS TALACOMA*, Smith.

Native name, "Menya-menya," from the sound it makes as if two pieces of bone were struck together. There is a fleshy yellow frill around the eye, not represented in the illustrations.

Common throughout the forest both of the Zambesi and Shiré valley.

Fam. MUSCICAPIDÆ.

32. *BIAS MUSICUS*.

In the collection of Dr. Dickinson.

33. *PLATYSTEIRA PRIRIT*.

34. *MUSCIPETA CRISTATA*, Gm.

Inhabits shaded forest, frequenting mango-plantations. The long tail-feathers are lost in the dry season, and they seem to be peculiar to the males.

35. *MUSCIPETA HOLOSERICEA*, Temm.

Frequents shaded forest near the river.

Fam. HIRUNDINIDÆ.

36. *HIRUNDO MONTEIRI* Hartl.: Ibis, 1862, p. 340, pl. 11.

On the banks of the river Shiré, away from dwellings, flying

* This species appears to me to be not different from *Prionops retzii*, Wahlberg. Öfv. af K. Vet. Ak. Förh. 1856, p. 174.—P. L. S.

near the water, and alighting on the clay-banks, where they were observed entering holes; but whether these had been originally formed by Bee-eaters was not ascertained.

37. *HIRUNDO ABYSSINICA*.

During two successive seasons observed building in the house, at Shupanga, on the Zambesi, in the months of December and January; not seen elsewhere, and absent during the dry season.

38. *HIRUNDO FILIFERA*, Stephens.

In Dr. Dickinson's collection.

39. *COTYLE PALUDICOLA*.

Shot, flying round the ship, in the Elephant Marsh.

Fam. *NECTARINIIDÆ*.

40. *NECTARINIA FORMOSA*.

In Dr. Dickinson's collection. I have seen this bird but once, in a thick clump of trees near the river Shiré, during the rainy season. It is a rare bird in the region.

41. *NECTARINIA AMETHYSTINIA*. Native name, "Sungwe."

The Sun-birds are abundant in open ground covered with low flower-bearing bushes, such as Poivreas, Dalbergias, Acacias, &c.; and they frequent especially such plants as the *Leonitis*, searching inside the corolla for insects, and probably sucking the saccharine juices. Before the rains they lose the fine plumage, and become of a dull mixed colour. December is the breeding-season; nests have been observed among the grass, attached to its stalks, and in the bushes. The young birds may be kept for some time on honey or sugar and water, which they lick up greedily from a straw or the corolla of a plant; but the absence of insect food probably causes them to die.

42. *NECTARINIA BIANCONI*.

Shupanga; common in the Zambesi valley.

43. *NECTARINIA COLLARIS*.

Zambesi and Shiré valley. Found near Shupanga and Lena, but not very common. Its nest has been seen suspended to grass-stalks.

Fam. STURNIDÆ.

44. LAMPROCOLIUS SYCOBIUS.

In large flocks near Teté, and in cultivated country along the Zambesi and Shiré, in August and September.

Fam. CORVIDÆ.

45. CORVUS SCAPULATUS, Daud.

Particularly common in the Portuguese towns, where it is the common scavenger, and also all up the river.

46. CORVUS ALBICOLLIS, Lath.

Generally seen near the hills; not often on the river.

Fam. FRINGILLIDÆ.

47. CRITHAGRA CHRYSOPYGA.

Zambesi and Shiré valley.

48. AMADINA, sp.?

Common in the Zambesi valley, near Shupanga: does not agree with any species described.

49. VIDUA PRINCIPALIS.

Common everywhere; not limited to grass plains, but frequenting woods, and coming near houses. It generally retains the long plumes throughout the year, although they become miserably worn towards the end of the dry season.

50. VIDUA ARDENS.

More rare than the *V. macrura*; but tolerably common in the Shiré valley, near Chibisa. Full plumage in December and January. Its habits are those of the former species.

51. VIDUA MACRURA.

Inhabitant of the great grass plains of the river Shiré, where it is seen in large numbers flying from one grass-head to another, always selecting the highest. Knowing this, the natives catch them by setting a noose on any grass-head rising above the others.

The tail-feathers appear in December, and continue during the wet season. The nest is made among the grass, woven among the stalks.

52. *VIDUA ALBONOTATA*, Cassin.

A single specimen in Dr. Dickinson's collection. I remember having seen it once on the Zambesi, not far from a marsh.

53. *VIDUA PARADISEA*.

In full plumage during January and February: a frequenter of the grass plains of the Zambesi and Shiré. During the cold season it is without the long plumes.

54. *EUPLECTES XANTHOMELAS*.

Zambesi and Shiré valley, near water.

55. *EUPLECTES SUNDEVALLII*.

The nests of the different *Euplectes* are found in colonies, hanging from the extremities of the branches of such trees as the *Acacia*, having delicate twigs: a position overhanging water is usually chosen. The nest is commonly suspended by a long peduncle of the same material. The opening is tubular and directed downwards. Besides breeding-nests, there are generally a number of a different construction in which the birds may rest. These frequently have two openings, or consist of a ring of woven grass.

56. *EUPLECTES PETITI*.

Zambesi and Shiré valley.

57. *HYPHANTORNIS*, sp.?

Shupanga, Zambesi valley. One specimen in dull plumage.

58. *PLOCEUS LARVATUS*. Native name, "Chiti."

The common Yellow Weaver of the marshes, building nests of grass attached to reeds, either to a single one or between two. There is no pendulous tube to the nest; the opening is lateral near the top. Breeds in February, having from three to four young in each nest. Many pairs build near each other, selecting such spots as are inaccessible—the reeds growing from deep water.

59. *PLOCEUS*, sp. nov.

Shiré valley. Specimens in British Museum.

60. *HYPOCHERA NITENS*.

In large numbers, and extremely variable in plumage; feeds on grass-seeds. Everywhere common.

Fam. CAPRIMULGIDÆ.

61. CAPRIMULGUS NATALENSIS.

Obtained in the plains near the sea-coast.

62. COSMETORNIS VEXILLARIUS.

The *Cosmetornis* was first observed about 300 miles up the Zambesi, a little above Teté, on the *Kebrabassa* Rapids, in November 1858, and was there decidedly common. It was again met with on the western side of Lake Nyassa (lat. 12° to 13° S.), where, in September and October, it was very common, being seen in flocks of from 15 to 20. It was also common at Chibisa on the Shiré, in lat. 16° S. It was only during the months from October until January that the singular prolongations of the wing-feathers were observed. These are peculiar to the males. Like other Nightjars, the habits of the *Cosmetornis* are crepuscular. It catches insects on the wing, and frequents bushy lands and the vicinity of water. When started during the day from the ground where they always rest, they fly swiftly to a little distance and again settle, but are extremely difficult to follow with the eye. Not so the males when in full plumage; in their case there is no difficulty; their flight is evidently retarded, and they become prominent objects from the long streamers waving behind them. A deviation from the usual habits of this bird was observed when cruising on the Nyassa. On two occasions being overtaken in a gale, and riding out a short but dangerous sea which set in and raised a surf on the shore, through which it was impossible to land, the male birds came off in flocks of about fifteen, and flew over the surface of the water. On no other occasion have I seen them take wing of their own accord, or keep on the wing during the day.

Fam. TROGONIDÆ.

63. HAPALODERMA NARINA. Native name, "M'voraio."

In the Zambesi region a decidedly rare bird: I know of only four specimens having been seen; one in the Zambesi delta, the others at Chibisa, on the Shiré. It seems to frequent trees.

Fam. MEROPIDÆ.

64. MEROPS NUBICOIDES.

Rather local; observed, however, both on the Zambesi and Shiré. On the former we found colonies of them, tunnelling their nests in the river-banks.

65. MEROPS SAVIGNII.

Gregarious; not seen in any numbers during the wet season. The nests are formed in the clay or sandy perpendicular banks of rivers, and consist of long passages about 3 inches in diameter, tunnelled in the face of the bank, and generally about 2 feet apart. The colony occupies a space of about 50 yards in extent. In the heat of the day they are seen flying together near their settlements, catching flies on the wing.

66. MEROPS BULLOCKOIDES, Smith.

Solitary in habits, frequenting the banks of streams.

67. MEROPS VARIEGATUS.

Widely distributed in the vicinity of water, catching insects during the heat of the day. Found solitary, or in pairs, but not in social colonies.

Fam. CORACIIDÆ.

68. CORACIAS CAUDATA.

A very common bird in the open woods and bush-country, near the Zambesi and other rivers. Cry harsh. The plumage varies considerably at different seasons, during the cold and dry being much less brilliant.

69. EURYSTOMUS AFER.

Local, and observed rarely near Teté. Frequent in the river-valley at Chibisa, on the river Shiré. Its habits resemble those of *Coracias caudata*.

Fam. UPUPIDÆ.

70. UPUPA MINOR.

Everywhere rather rare, but widely distributed; found in the interior of the continent and near the coast. It is not injured by the natives, by some of whom it is named the "Little Doctor," in connexion with some superstition.

71. *IRRISOR ERYTHORHYNCHUS*.

Habits the same as of the next species, than which it is more local. Near the head of the Lower Shiré valley it was particularly abundant.

72. *IRRISOR CYANOMELAS* (Smith).

A noisy chattering bird, found in bush-country and forest, commonly near rivers. In its flight it is peculiar, rising suddenly, and again descending more slowly while it flies along. Occurs in flocks of about twelve, which, on settling in a bush, run quickly up the branches and round the stem in search of insects.

Fam. *ALCEDINIDÆ*.

73. *ALCEDO CRISTATA*.

Universal on all the waters, sitting on the reeds or bushes which overhang them, and darting on its prey.

A larger species of *Alcedo* was observed among the rapids of the Shiré, but not anywhere else.

74. *CERYLE MAXIMA*. Native name, "Chidolde" and "Machengwen."

Frequent throughout the country on the courses of the rivers; feeds exclusively on fish, which it catches when on the wing by dropping suddenly, carrying its prey off in the bill, and swallowing it at its leisure, perched on a tree.

75. *CERYLE RUDIS*. Native name, "Kapa-kapa."

Abundant on all rivers and lakes throughout the region, catching the fish by dropping suddenly from above. It commonly makes many unsuccessful attempts before getting anything.

76. *HALCYON STRIOLATA*. Native name, "Mombudzu."

Widely distributed, and equally common on the sea-coast among the mangroves, and near the river far in the interior; also in the plains. Its food consists of insects, which it seems to catch on the wing. It is a sweet songster, both before and during the rains.

Fam. *BUCEROTIDÆ*.

77. *BUCORAX ABYSSINICUS*.

Widely spread, but nowhere plentiful, and difficult to obtain,

being shy, feeding on the ground in the open plains or in forest. Occurs singly, but more frequently in pairs or in flocks of five or six. A specimen is in Dr. Dickinson's collection.

78. *BUCEROS CRISTATUS*. Native name, "Kakomira."

A local bird, not known to the natives from the interior; frequent on the river Shiré. Year after year it returns to the same roosting-places, living in large flocks. During the breeding-season, or after the rains have set in, these become scattered in the forest, where the natives say the female hatches the eggs in a hole under ground, in which she is plastered up by the male. The vessel being at anchor near one of the roosting-places, we had an opportunity of seeing their habits. Towards sunset, in the months of August and September, they came in from different quarters in pairs; the male always known by his large bill. On perching, they uttered a loud cry heard far off, and hopped from one branch to another, always keeping in pairs. As night set in they became quiet, and roosted on the branches of the large trees. Early in the morning they were off again, an hour before sunrise, not to return until the evening. The affection of these birds for one another seemed remarkable. On one occasion, as a large male passed suddenly, I fired and missed; but the bird fell from fear, and before it had fairly got on the wing again, was secured and taken to the ship. It began to get tame, and rather unwillingly took food; but the female came every morning, when the others had gone to the forest, and remained hovering about until 9 A.M., calling to its mate which it saw on the deck to follow: at last she went off, but came back in the evening to repeat the invitation. After five days the male became sulky, would eat nothing, and died. No injury was found, and, but for the female, there seemed no reason why it should not have lived.

79. *BUCEROS BUCCINATOR*. Native name, "Kakomira e nono."

Rather common both in the mountains and plains, frequenting the forests, and living in small flocks. It returns every night to the same roosting-place, leaving in the day in search of fruits. It is very fond of a drupaceous species of *Strychnos* (resembling the

S. potatorum of India), the fruit of which is said to be poisonous to man. Its cry is loud and harsh.

80. *TOCCUS ERYTHORHYNCHUS*.

By the natives this and the two following species of *Toccus* are included under the name "Kopi."

In all open woodlands they are common, feeding on fruits and insects; breeding in the hollows of trees during the season, the female being closed in during the time of incubation, when she moults her feathers, and is unable to fly.

81. *TOCCUS PÆCILORHYNCHUS*.

In Dr. Dickinson's collection. I saw the species in the Shiré valley; but it is rather rare, I believe.

82. *TOCCUS MELANOLEUCUS*.

River Shiré valley, in open bush and low trees.

Fam. CUCULIDÆ.

83. *CHALCITES CUPREUS*.

Rare; found at the foot of Moramballa Mountain, and halfway up the Shiré, in a wood: it frequents forests. One specimen is in Dr. Dickinson's collection; probably from near the same locality.

84. *ZANCLOSTOMUS ÆNEUS*, Vieill.

In Dr. Dickinson's collection: a native of the plains.

85. *CENTROPUS SENEGALENSIS*.

Very common in all the grassy borders of rivers; looked upon by the natives with disgust, and never eaten.

Fam. INDICATORIDÆ.

86. *INDICATOR MINOR*.

The Honey-Guide is found in forests, and often far from water, even during the dry season. On observing a man, it comes fluttering from branch to branch in the neighbouring trees, calling attention. If this be responded to, as the natives do by whistling and starting to their feet, the bird will go in a certain direction and remain at a little distance, hopping from one tree to another. On being followed, it goes further; and so it will

guide the way to a nest of bees. When this is reached, it flies about, but no longer guides; and then some knowledge is needed to discover the nest, even when pointed out to within a few trees. I have known this bird, if the man after taking up the direction for a little then turns away, come back and offer to point out another nest in a different part. But if it do not know of two nests, it will remain behind. The difficulty is, that it will point to tame bees in a bark-hive as readily as to those in the forests. This is natural, as the bee is the same; the bark-hive, "Musinga" as it is named, being simply fastened up in a tree and left for the bees to come to. The object the bird has in view is clearly the young bees. It will guide to nests having no honey, and seems equally delighted if the comb containing the grubs be torn out, when it is seen pecking at it.

Fam. PICIDÆ.

87. DENDROBATES HARTLAUBII.

Frequent in all woods, in the Zambesi and Shiré valley.

88. DENDROBATES NAMAQUUS.

Murchison Rapids, river Shiré; March. This species of Woodpecker is much rarer than the smaller sort, and limited to certain localities.

Fam. CAPITONIDÆ.

89. POGONORHYNCHUS NIGRITHORAX.

Common in open forests of the Zambesi valley; frequently to be found on fig-trees.

Fam. MUSOPHAGIDÆ.

90. CORYTHAIX LIVINGSTONI (Gray)*.

This species, which is very nearly allied to the Cape *C. albocristatus*, differing in the front feathers of the crest being somewhat larger, ending in a prolonged point, is peculiar to the mountains south of Lake Nyanza, where it was seen by Dr. Livingstone and myself in 1859, when passing to Lake Shirwa. On that occasion we noticed it in the ravine at the foot of the hills within a few miles of the river, but on no subsequent occasion was it seen so low down.

* *Turacus livingstonii*, G. G. Gray, P.Z.S., 1864, p. 44.

It is most common near a hill called Sochi, and in the wooded river-banks of the region near the late Bishop Mackenzie's mission-station.

91. *CORYTHAIX PORPHYREOLOPHUS*.

This was the common species of the plains; but not noticed high up the mountains. They are found in pairs and in small flocks.

92. *SCHIZORHIS CONCOLOR*.

Rather a common bird in wooded country at the foot of mountains; named by the natives, from its cry, "Kwe-kwe," which it utters while perched on the top of some of the higher trees.

Fam. COLIIDÆ.

93. *COLIUS QUIRIVA*, Vieill.

These birds fly in large flocks from bush to bush; they are common in the open forest and bushwood of the river-valley.

Fam. PSITTACIDÆ.

94. *PHŒOCEPHALUS FUSCICAPILLUS* (Verreaux). Native name, "Goe."

The most common of the Parrot tribe in East Tropical Africa; usually found in small flocks or in pairs; feeds on fruits, such as figs, &c., but also eats native millet and maize. Its clear scream may be heard at a great distance.

95. *PHŒOCEPHALUS LEVAILLANTI*.

A much rarer species on the Zambesi than the *P. fuscicapillus*. It has been observed in flocks of four in the month of April. Its food consists of wild fruit and the kernels of nuts.

Besides these two Parrots, a third, smaller species, which I believe to be the *Agapornis roseicollis* of South Africa, was found in one spot, limited to about twenty miles, on the Shiré, between Nyassa and the rapids. It was never seen elsewhere, but was found there on two occasions. It is gregarious.

Fam. COLUMBIDÆ.

96. *TRERON ABYSSINICA*.

Occurs in flocks, in December and January, at Shupanga, in

the Zambesi valley. Its food consists of fruits, particularly the wild figs.

97. *CHALCOPELIA CHALCOSPILOS.*

Common in dry rocky parts near Teté, also on the river Shiré in the valley. Its nest is formed in small bushes.

98. *TURTUR SEMITORQUATUS.* Native name, "Jiwa," "In-gurumba."

Very common everywhere.

99. *TURTUR SENEGALENSIS.*

Frequent in all the bush-country.

Fam. *TETRAONIDÆ.*

100. *FRANCOLINUS HUMBOLDTI*, Peters. Native name, "Kware."

This was the only Francolin of which I brought back specimens obtained on the Manganja hills; but there are five different species of this group in the Zambesi region, some peculiar to the coast and neighbouring parts, others to the highlands and plains of the interior. The Francolins feed on the ground, and spend the whole day there, but roost in trees at night.

Fam. *PHASIANIDÆ.*

101. *NUMIDA MITRATA.* Native name, "Khangá;" in the interior, "Kaha."

Extremely common. Met with in large flocks during the dry season, when every night they come to drink at the water and roost in the trees overhanging. When the rains commence, the flocks go off to the interior, and scatter for the purpose of breeding. Although easily domesticated, it does not breed in captivity; and fresh birds require to be got, or eggs obtained from the nests in the bush.

102. *NUMIDA CRISTATA.* Native name, "Khangá tore."

This fine species was observed in large flocks at the head of the Zambesi Delta, Shupanga, on the Shiré at Chibisa, and in the interior, about forty miles east of the Victoria Falls. Its nest is formed on the ground, among grass. This keeps more

to the forest than the common Guinea-fowl, which frequents the open plains, and resorts during the dry season to the river every night.

Fam. OTIDÆ.

103. OTIS MELANOGASTER.

In Tropical Africa there are several species of Bustard. This one only was obtained. This inhabits the grassy downs lying between the mangrove-creeks and the sea-coast at the Zambesi mouth. It is a very shy bird, difficult to approach. They occur solitary or in pairs, and seem to remain throughout the year. No marked difference observable on the wing appeared between the sexes. But one only was shot, and that could be obtained only by the rifle. In the Kalahari Desert there is a much larger species; and in the plains beyond the Victoria Falls a smaller one, very similar, if not identical with the coast-bird, is tolerably common. The same was seen on the shores of the Nyassa Lake.

Fam. GRUIDÆ.

104. BALEARICA REGULORUM. Native name, "Garv;" in the interior, "Mowang."

Found on the Zambesi and Shiré at all seasons; also on Lake Nyassa. It is seen in flocks in the interior; but near the coast more commonly in small numbers.

Fam. CHARADRIIDÆ.

105. ŒDICNEMUS SENEGALENSIS. Native name, "Maruro." Frequent by the river-bank, Zambesi, Shiré, and Roruma.

106. CHETTUSIA CRASSIROSTRIS, De Filippi.

River Shiré; common in open cleared spaces and cultivated fields.

107. VANELLUS LATERALIS, Smith, S. Afr. Zool. pl. 23.

A very noisy bird, flying overhead and uttering its harsh chattering cry. To the sportsman it is a peculiar annoyance, as it is certain to direct the attention of the game to his presence. Very frequent in cultivated fields near water.

108. *LOBIVANELLUS SENEGALENSIS*.

River Shiré and Zambesi. Frequents cultivated lands.

109. *ÆGIALITES TRICOLLARIS*.

From the Elephant Marsh, river Shiré.

110. *GLAREOLA NORDMANNI*.

Lake Nyassa, on the sand, in October; also on the Zambesi, in the same month. Not seen at other times of the year.

Fam. *SCOLOPACIDÆ*.

111. *GALLINAGO NIGRIPENNIS*, Bp.

Commonly in pairs; the habits are like our own Snipe, which it equals in flavour. An inhabitant of the Shiré marshes.

112. *TRINGOIDES HYPOLEUCA*.

Frequents open sandy places on the river-bank, along the Zambesi and Shiré.

113. *TOTANUS GLAREOLA*.

River Shiré, marshes and sand-banks; common.

114. *STREPSILAS INTERPRES*.

Shores of Lake Nyassa.

115. *RECURVIROSTRA AVOCETTA*.

Not unfrequent in damp localities near marshes.

Fam. *ARDEIDÆ*.

116. *ARDEA GOLIATH*.

A difficult bird to obtain, its great height enabling it to command a view over the grass or marsh-vegetation. Nowhere plentiful; but to be seen in the swamps of the Zambesi Delta and on Lake Nyassa.

117. *ARDEA PURPUREA*.

Common in all marshy places and near rivers. Breeds in the swampy spots or islands, making its nest at the foot of the reeds: each has two or three eggs in February. They live in societies, returning to the same place a little before sunset.

118. *ARDEA ATRICOLLIS*.

Scattered throughout the marshy regions of the rivers and lakes; commonly found singly or in pairs.

119. *BUPHUS COMATUS*.

Commonly in pairs; feeds in marshes and shallow water.

120. *HERODIAS CALCEOLATA* (Du Bus).

Occurs singly or in pairs along the marshy parts of the river Shiré. Plumage dark slate-colour, almost black.

121. *HERODIAS BUBULCUS*. Native name, "Kakoe."

Follows herds of elephants and buffaloes, sitting on their backs, or flying near to them; so that in long reeds the game may be followed when nothing but the birds are visible.

122. *BUTORIDES ATRICAPILLUS*.

By no means common. A solitary bird, keeping to the river. Flying close along under the banks, and perches on the bushes which overhang, from which it watches for its prey.

123. *NYCTICORAX EUROPÆUS*. Native name, "Zonzi."

Common in all marshes; roosting among the reeds on the islands. Flies in the dusk of evening.

124. *LEPTOPTILUS CRUMENIFERUS*, Cuv. Native name, "Gote."

The feathers under the tail are much valued, but never collected in Eastern Africa. This bird feeds on fish, reptiles, and carrion. It is readily tamed, and is then of use near a house.

125. *MYCTERIA SENEGALENSIS*.

Not uncommon on the Zambesi and Shiré; more frequent on Lake Nyassa and the river Rovuma. Feeds on snakes, frogs, and fish. On the Rovuma it was seen catching fish in shallow water, by running forward rapidly, so as to make the fish rush past it, when it caught them, keeping its bill all the while in the water. They are commonly found in pairs,—never in large flocks.

126. *ANASTOMUS LAMELLIGERUS*, Temm.

Frequent on the Zambesi and Shiré, in marshy localities. Found usually in flocks, roosting together on the marsh-shrubs or on neighbouring trees. Feeds on shell-fish. The nests are placed in trees.

127. *SCOPUS UMBRETTA*. Native name, "Nyamchengwe."

Although seemingly a clean feeder, eating small fish, the

Africans look on this bird as unfit for food, and also as sacred, or as possessing the power of witchcraft; and to injure it is everywhere regarded as unlucky. It haunts water, both running and stagnant. In its nest it is the most remarkable of all birds in Tropical Africa. This is built either on a ledge of rock or more frequently in some large tree. It is the work of a single pair, and yet is colossal, sometimes measuring six feet in diameter, in the form of a flattened dome. The entrance is at one side, and small. The greater part of the mass is solid, and composed of sticks and branches of trees intimately woven together. This serves for many years. The birds remain throughout the year.

128. PLATALEA, sp. ?

No specimen was obtained, although the bird is not unfrequent on the Zambesi and lake. The bird resembles that of Europe, as far as could be judged in the distance.

Fam. TANTALIDÆ.

129. TANTALUS IBIS.

Common in all the rivers; feeding on the mud- and sand-banks.

Their flesh is very good; but the outer layer of fat must be removed, otherwise they are too oily. They feed in shallow water, on small insects and larvæ in the mud and sand. Commonly found in large flocks.

130. IBIS RELIGIOSA, Cuv.

Arrives from the north in December. It is found at all seasons near the coast, where it feeds on the sea-shore at low water. Its flesh is very good eating.

131. FALCINELLUS IGNEUS.

Rather common, but a shy bird, difficult to approach; its cry is loud and harsh. It feeds in marshes and near rivers, but perches on the high trees when disturbed.

Fam. PARRIDÆ.

132. PARRA AFRICANA.

Very common wherever there are water-plants. When the

Pistia comes down with the rise of the water in masses and covers the surface of the Zambesi, these birds run about on the water-weeds, flying from one mass to another. The natives have a peculiar abhorrence of the flesh, although the birds are fat and well-flavoured.

Fam. RALLIDÆ.

133. PORPHYRIO, sp.?

No specimen obtained; but in the Quilimane marshes it is frequent. Colour, clear blue.

134. RALLUS CÆRULESCENS.

Common in the grass, bordering marshes, in the upper part of the river Shiré.

135. LIMNOCORAX MOSAMBICUS, Peters. Native name, "Nwana gombe a nwana."

Common in all the marshes, living in the grass, and feeding among the floating vegetation. Never flying further than a few yards.

Fam. PHÆNICOPTERIDÆ.

136. PHÆNICOPTERUS PARVUS.

Zambesi Delta, Shiré valley, Lake Nyassa, Mozambique. A constant dweller throughout the year in the Zambesi Delta. Found in other parts during the wet season only. It is commonly in large flocks. Considered excellent food, but difficult to obtain.

Fam. ANATIDÆ.

137. SARCIDIORNIS AFRICANUS. Native name, "Nango mwamba."

Found only during the rainy season and the few months which follow, but not seen during the dry hot time. Feeds in fields and marshes; perches readily on trees. The flesh is good, more tender than that of the Black Goose, but without the delicate flavour of the Whistling Duck.

138. PLECTROPTERUS GAMBENSIS. Native name, "Tsekwe," from its note.

These birds vary from 10 to 14 lbs. weight. They come

with the rains, in flocks of ten or twelve, and remain to breed in the marshes. Their favourite food is the "Nyka," or tuberous enlargement of the bud of the *Nymphæa*, which they swallow. They perch on trees, and seem occasionally to roost. In the daytime they often settle on the trees near their feeding-ground.

139. *CHENALOPEX ÆGYPTIACUS*. Native name, "Nango."

Frequents the Zambesi and Shiré; breeding during January at the coast, and inland on the islands. Either solitary or in pairs, never in flocks. This is the worst of all the Duck-kind for the table, being in many cases quite uncatable.

140. *NETTAPUS AURITUS*. Native name, "Squiri."

This beautiful bird is confined to lagoons near the rivers and lakes, being very seldom to be seen on the main waters. It occurs in pairs, and in flocks of eight or ten. When disturbed, it flies along the water, following all its windings, never crossing the country. Its habits are entirely aquatic. It dives, and remains long under the surface, and is very difficult to obtain when wounded, getting entangled in the weeds at the bottom.

141. *DENDROCYGNA PERSONATA*. Native name, "Soriri."

In all marshy lands very abundant; large flocks arriving with the rains in November and December, but never entirely deserting the region. It breeds in the marshes and on islands. The favourite food is the seed of the *Nymphæa*. During the night the various flocks pass to and fro, uttering a frequently repeated clear whistling note. The flesh is particularly fine; and sitting in dense masses on the mud-banks, they may be had in great numbers from a canoe while passing the marshy regions, in which large game is difficult to procure.

142. *ANAS SPARSA*, Smith. Native name, "Tunta."

This is a bird nowhere very common, but widely distributed. It occurs in single pairs. The first appearance is with the rains, and it remains to breed. After the end of April it is not seen. The young may be obtained in March.

Fam. PODICIPIDÆ.

143. *PODICEPS*, sp. ?

Very abundant in a lagoon near Mozambique, but not observed on the Zambesi. Whether this is the same species as that found in the hill-lake in Joanna Island is uncertain, as specimens were not compared; in size they resembled each other, both being small.

Fam. LARIDÆ.

144. *STERNA CASPICA*.

In the month of January these birds were found breeding in company with the following species, on the low sand-islands off the mouth of the main stream of the Zambesi. There were commonly two or three eggs in each nest. The eggs were of a dirty grey, with black spots. The nests resembled those of the other species.

145. *STERNA VELOX*, Rüppell.

Found breeding on the low treeless sand-island off the Luabo mouth of the Zambesi, in the month of January. The nests, which were placed a few yards from the tide-mark, consisted of slight hollows in the sand, with a few sticks gathered round. They were quite open and exposed, or placed occasionally under shelter of any log of wood cast up, but never in the centre of the island. This place is well protected from visits of monkeys by a wide extent of water. In former years these birds, and also Pelicans, used to breed on a similar spot at the Kongane mouth; but since, by the filling up of one of the channels, there has been communication with the mainland at low tide, they have deserted it, and the young *Avicennia* springing up harbour the small Monkey.

146. *RHYNCHOPS FLAVIROSTRIS*.

In the upper parts of the Zambesi and Shiré these birds may be seen passing up and down, skimming the water, commonly in flocks of ten or twenty. These singular birds are most active in the afternoon. In none examined was any food observed in the stomach. They are always extremely fat, and troublesome to skin.

Fam. PELECANIDÆ.

147. *LOTUS LEVAILLANTII*.

In all waters, from the coast to the interior, to be seen sunning its wings on rocks or trees; on the least danger betaking to the water. The plumage varies very much; sometimes it is of a rich glossy black, at other times of a rich brown. Its food consists entirely of fish, which it catches under water, coming to the surface before swallowing it.

148. *PHALACROCORAX AFRICANUS*. Native name, "Chidankwe."

Common in all rivers, lakes, and lagoons. Its breeding-places are the retired islets among the rapids, commonly unapproachable.

A second species, much larger and with white neck, occurs rarely on the Lower Zambesi, but is common among the rapids of the Shiré, where it breeds, and on Lake Nyassa. In the shallow lake through which the Shiré flows after leaving the Nyassa, the natives drive piles in the bottom, at a distance from shore, and rising a foot above the surface. An elastic piece of wood, with a noose attached, is placed on the main pile, and serves to trap the Cormorants and Darters, which come to rest on them.

149. *PELECANUS*, sp.?

The Pelican of the Zambesi comes in numbers before the rains, or with the first heavy showers; but individuals are to be found at all seasons.

On one occasion a large flock was found breeding on the low sand-island at the Kingane mouth. The nests consisted of a slight hollow in the sand, with a few sticks placed as a platform, to keep the eggs slightly raised; each contained from two to four eggs, and the nests were placed side by side. From one colony several bucketsful of eggs were obtained. In the pouch were several species of parasitic worms, which we did not notice in other birds.

150. *PRION BANKSII*, Smith. *Pachyptila banksii*, Smith, S. Afr. Zool. pl. 55.

After storms these birds come ashore in a fatigued and help-

less state in great numbers, and die on shore. They are seen at sea in the Mozambique and Indian Ocean, and are very abundant off the banks near the Seychelles. When driven ashore, they are in so emaciated a state as to dry up without undergoing putrefaction.

XXVI.—*Note on Aquila barthelemyi, Jaubert.*

By J. H. GURNEY.

IN the spring of 1857, I was informed by my friend M. Jules Verreaux that he could procure me two living specimens of *Aquila barthelemyi*, which had been recently taken from the nest on the Sainte Victoire Mountains, in the south of France—the locality especially designated as the head-quarters of this Eagle by Messrs. Jaubert and Barthélemy-Lapommeraye, in their work entitled ‘Richesses Ornithologiques du Midi de la France.’

Having requested M. Verreaux to obtain for me these young Eagles, they were accordingly forwarded soon afterwards; but on their arrival I could perceive nothing to distinguish them from ordinary Golden Eagles of the same age. One of them had been injured in the wing; and as this accident much detracted from its beauty as a living specimen, in February 1858 I had it killed, mounted, and placed in the Norwich Museum. This bird, on dissection, proved a male, and agreed both in size and colour with male birds of the ordinary *Aquila chrysaëtos* of the same age, being entirely destitute of the white scapular spots by which *Aquila barthelemyi* is ordinarily distinguished. The surviving bird (which I believe to be also a male) has remained alive in my possession to the present time; but I could never detect anything in its plumage different from that of the Golden Eagle until April of the present year, when, on visiting the bird after some months’ absence from home, I found, to my pleasure and surprise, that the first scapular feathers on both sides of the body had become snow-white, exactly as depicted in the plate given in Messrs. Jaubert and Barthélemy-Lapommeraye’s work, and closely resembling (allowance being made for the difference of size in the two birds) the white scapular spots which occur in most specimens of *Aquila pennata*.